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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,218	09/21/2001	Ralph N. Crabtree	BRCK-001/01US	5873
22903 7590 04/23/2007 COOLEY GODWARD KRONISH LLP ATTN: PATENT GROUP Suite 500 1200 - 19th Street, NW WASHINGTON, DC 20036-2402			EXAMINER REKSTAD, ERICK J	
			ART UNIT	PAPER NUMBER
			2621	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/960,218	CRABTREE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Erick Rekstad	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 7,8,12,13,17-24 and 26-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7,8,12,13,17-24,26-32 and 34 is/are rejected.
- 7) ☐ Claim(s) 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/31/2007</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This is a Final Rejection for application no. 09/960,218 in response to the amendment filed on January 25, 2007 wherein claims 7, 8, 12, 13, 17-24, 26-34 are presented for examination.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 7, 8, 12, 13, 17-24 and 26 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to claim 20 have been fully considered but they are not persuasive. The Applicant argues that Kennedy does not disclose or suggest resolving a conflict associated with a link after a link has been formed between paths. The Examiner respectfully disagrees. As shown in the rejection for claim 20, Kennedy teaches the resolving of a conflict associated with the link (conflict being the potential that the resulting track would be linked with another base track and the use of observation points in other resulting tracks) once the link has been made. If the Applicant is attempting to claim subject matter related to a conflict within the link itself such language should be added.

Applicant's arguments with respect to claim 26 have been fully considered and are persuasive. The rejection under U.S.C. 103 of claim 26 has been withdrawn.

In regards to the Applicants Challenge of Official Notice in regards to sorting, the Examiner notes the below 112 rejection for claim 23. The claim broadly requires a sorting of paths based on time values. Kennedy teaches the sorting of paths into a Base path group (Bi) and a resulting path group (Ri) (Col 5 Lines 34-40). Note: in

Figure 1A, the Base paths (B1 B2 and B3) have an earlier time (t) then the resulting paths (R2, R1, R4). Thus by the broad limitations of claim 23, Kennedy satisfies the sorting of paths based on time values.

### ***Claim Objections***

Claim 32 is objected to because of the following informalities: The claim states "third parth" which should be "third path". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 7-13, 17-24, 27-33 are rejected under 35 U.S.C. 101 because the claims do not meet the 35 U.S.C. 101 requirements (the claims have improper language regarding the processor-readable medium). Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and

hardware components which permit the data structure's functionality to be realized, and is thus statutory.

The examiner suggests changing the preamble of the claims to read "A computer-readable medium encoded with a computer program representing instructions to cause a computer to:".

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 28, 26, and 34 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: a merging step. Claim 28 and 26 requires "preventing a merging" but a merging step is never required in claim 7 or 26. Claim 34 is dependent on rejected claim 26 and therefore is also rejected under 112.

Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: The providing of two sorted collections of paths. The claim states, "configured to sort the plurality of paths according to a start time value associated with the start spatial value for each path and an end time value associated with the end spatial value for each path" this requirement only requires some variation of providing a collection of sorted paths related to the start and end values not providing a collection of paths sorted by start values and a collection

of paths sorted by end values. Further the claim does not specify the type of sorting (i.e. descending or ascending).

Claim 29 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: The deletion of the data element related to the spatial value being deleted. The Specification does not support the deletion of just the spatial value while retaining the data element with the time value. The claim should be amended to clarify the process, such that the data element related to the spatial value associated with the exclusion region is deleted.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 7, 12, 20, 21, 30, 31, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,404,455 to Ito et al.

[claims 7 and 30]

As shown in Figures 11, 20, 21A and 21B, Ito teaches a processor (906, Fig. 8) which runs a program (Program Memory 907) to:

Analyze information used to define a first and second path, the information used to define the paths include a plurality of data elements, each data element from the plurality of data elements associated with the paths including a spatial value and a time value (Fig. 20), each spatial value associated with the paths indicating a position of a person associated with the first path at a time associated with the corresponding time value (Col 13 Line 60-Col 14 Line 14, Fig. 22). Note as shown in Figure 6, the object is a person.

Determine, at least partially based on the analysis of the information used to define the first path and the analysis of the information used to define the second path, if the person associated with the first path and the person associated with the second path are the same person (Col 14 Lines 5-13).

As shown in Figure 20, Objects at C31 and C32 are linked at C33. The link is removed through correction processing (112 and 113 of Figure 11) based on a conflict-resolution rule (Col 14 Lines 5-13, Col 18 Lines 35-51).

[claim 12]

As shown in Figure 8, the objects are detected using video images obtained using a camera (901). The spatial values for the points are those points within the video image (Col 13 Lines 18-63, Fig. 22).

[claim 20]

It teaches a processor (906, Fig. 8) which runs a program (Program Memory 907) to:

Receive information associated with a plurality of paths, each path from the plurality of paths representing movement of an object defined over time.

Iteratively determine, for each path from the plurality of paths, whether that path can be linked to another path from the plurality of paths at least partially based on a predetermined linking rule; and

Produce a link between a first path from the plurality of paths and a second path from the plurality of paths based on the iteratively determining (Col 15 Lines 34-41 and Line 66-Col 16 Line 21, Fig. 9).

Resolving a conflict associated with the link based on a predetermined conflict resolution rule (Col 18 Lines 33-51, Figs. 11, 20, 21A and 21B).

[claims 21 and 31]

As shown in Figure 20, the object at C31 and object C32 are linked at C33. The conflict with the link is resolved resulting in the removing of paths from the set of linked paths and producing the paths shown in Figures 21A and 21B. Note the conflict is based on the intersection of two object which are later determined to be separate, thus resulting in a path breaking rule.

[claim 32]

As shown above for claims 21 and 31, Ito teaches the removing of links based on breaking rules. As shown in Figures 24-26B, Ito teaches the paths may contain several links which must be corrected.

Claims 20, 22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,491,645 to Kennedy et al.



[claim 20]

Kennedy teaches a program run by a central processing unit (Col 4 Lines 15-23) in order to cause the processor to:

Receive information associated with a plurality of paths, each path from the plurality of paths representing movement of an object defined over time (Col 4 Lines 30-40, Col 5 Lines 21-23);

Iteratively determine, for each path from the plurality of paths, whether that path can be linked to another path from the plurality of paths at least partially based on predetermined linking rules (Col 2 Lines 60-67; Figs. 3A and 3B).

Produce a link between a first path from the plurality of paths and a second path from the plurality of paths based on the iteratively determining (Col 5 Lines 53-56).

Resolve a conflict associated with the link based on a predetermined conflict-resolution rule (Col 5 Line 60-Col 6 Line13). Note, Kennedy teaches the removal of observation points and the linked resulting track in order to resolve a conflict with the produced link and further calculations for obtaining links.

[claim 22]

Kennedy further teaches wherein each path from the plurality of paths includes a plurality of data elements, each data element from the plurality of data elements associated with a path from the plurality of paths including a spatial value and a time value, the code representing instructions to cause a processor to iteratively determine being configured to extract and store at least one data element associated with each path from the plurality of paths, the at least one data element including at least one of a

start spatial value, an end spatial value, a length between a start value and an end spatial value (Col 5 Lines 15-27, Col 7 Lines 1-29). Note: The start and end times are used to determine the time gap.

[claim 24]

As shown above, Kennedy teaches each path from the plurality of paths includes a plurality of data elements, each data element from the plurality of data elements associated with a path from the plurality of paths including a spatial value and a time value (Col 6 Lines 26-28). Kennedy further teaches the code representing instructions is configured to determine if a distance between an end spatial value of a first path from the plurality of paths and a start spatial value of a second path from the plurality of paths is within a predetermined threshold (Col 7 Lines 1-5 and Lines 31-32, Fig. 1C and 1D). Note: the instructions use only paths that are contained in the same satellite field for one test and only paths that are not contained in the same satellite field in another test. Kennedy further teaches the code determines if a time between an end time value of a first path from the plurality of paths and a start time value of a second path from the plurality of paths is within a predetermined threshold (Col 7 Lines 8-15).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 8, 17-19, 23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,491,645 to Kennedy et al. in view of US Patent 6,246,323 to Fischbach.

[claim 7]

Kennedy teaches a program run by a central processing unit (Col 4 Lines 15-23) in order to cause the processor to:

Analyze information used to define a first path, the information used to define the first path including a plurality of data elements, each data element from the plurality of data elements associated with the first path including a spatial value and a time value, each spatial value associated with the first path indicating a position of an object associated with the first path at a time associated with the corresponding time value (Col 4 Lines 41-49 and Lines 56-62, Col 5 Lines 15-23, Figs. 1A and 1B).

Analyze information used to define a second path, the information used to define the second path including a second plurality of data elements each data element from said second plurality of data elements associated with the second path including a spatial value and a time value, each spatial value associated with the second path indicating a position of an object associated with the second path at a time associated with the corresponding time value, the spatial value used to define the second path including spatial values not included in the information used to define the first path (Col 5 Lines 24-40, Fig. 1A); and

Determine, at least partially based on the analysis of the information used to define the first path and the analysis of the information used to define the second path,

if the object associated with the first path and the object associated with the second path are the same object (Col 5 Lines 41-48, Col 6 Lines 26-58).

As shown in Figure 1A, Kennedy teaches the use of satellites to provide the paths of targets (Abstract). Kennedy is silent on the target being a person. Fischbach teaches the use of a tracking means using satellites to track drivers attempting to escape authorities (Abstract, Col 1 Lines 9-11, 16-20, Col 2 Lines 26-29, Col 3 Lines 56-59, Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the tracking method of Kennedy with the target of Fischbach in order to track drivers attempting to escape authorities.

[claim 8]

Kennedy further teaches output information used to define a third path, if it is determined that the object associated with the first path and the object associated with the second path are the same object, the information used to define the third path including the plurality of spatial values used to define the first path and at least a portion of the plurality of spatial values used to define the second path thereby creating a path representing a limiting of the first and second paths (Col 2 Lines 20-27, Col 5 Lines 41-48).

[claim 17]

Kennedy further teaches the use of instructions to cause a processor to determine a confidence value that the object associated with the first path and the object associated with the second path are the same object the code representing instructions to cause a processor to determine if the object associated with the first path

and the object associated with the second path are the same object being configured to make a determination at least partially based on the confidence value (Col 8 Lines 39-53).

[claim 18]

Kennedy further teaches the use of instructions to cause a processor to determine if the object associated with the first path and the object associated with the second path are the same object includes instructions to determine at least whether an end spatial value of the first path is within a predetermined distance of a start spatial value of the second path, an end spatial value of the first path having a corresponding time value that is chronologically last of all time values uniquely associated with the plurality of spatial values used to define the first path, a start spatial value of the second path having a corresponding time value that is chronologically first of all time values uniquely associated with the plurality of spatial values used to define the second path (Col 7 Lines 1-30, Col 9 Lines 36-60, Fig. 1C)

[claim 19]

Kennedy further teaches the use of instructions to cause a processor to determine if the object associated with the first path and the object associated with the second path are the same object includes instructions to determine at least whether a time value corresponding to an end spatial value of the first path is within a predetermined time of a time value corresponding to a start spatial value of the second path, the end spatial value of the first path having a corresponding time value that is chronologically last of all time values uniquely associated with the plurality of spatial

values used to define the first path, the start spatial value of the second path having a corresponding time value that is chronologically first of all time values uniquely associated with the plurality of spatial values used to define the second path (Col 7 Lines 1-16).

[claim 23]

Kennedy teaches the comparing of base tracks which have an early start time with result tracks which have a later start time (Col 4 Lines 41-49). The first test is to determine the tracks which overlap (start time of result track is less than the end time of the base track and points coincide) (Col 6 Lines 28-63). The claim broadly requires a sorting of paths based on time values. Kennedy teaches the sorting of paths into a Base path group ( $B_i$ ) and a resulting path group ( $R_i$ ) (Col 5 Lines 34-40). Note: in Figure 1A, the Base paths ( $B_1$ ,  $B_2$  and  $B_3$ ) have an earlier time ( $t$ ) than the resulting paths ( $R_2$ ,  $R_1$ ,  $R_4$ ). Thus by the broad limitations of claim 23, Kennedy satisfies the sorting of paths based on time values.

[claim 27]

Kennedy further teaches produce a link between the first path and the second path when the person associated with the first path and the person associated with the second path are the same person; and resolve a conflict associated with the link based on a predetermined conflict-resolution rule (Col 5 Line 63-Col 6 Line 5). Note, the conflict-resolution rule is that no points from a resulting track that has been related to a base track can be present in any of the remaining resulting tracks.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy and Fischbach as applied to claim 7 above, and further in view of US Patent 5,959,529 to Kail and 'Automatic Tracking of Human Motion in Indoor Scenes Across Multiple Synchronized Video streams' by Cai et al.

[claim 12]

As shown above for claim 7, Kennedy and Fischbach teach the information used to define the first and second paths are spatial values obtained from the area viewable by the satellites (Col 5 Lines 15-26 and Col 6 Lines 26-29). Kennedy does not teach the obtaining of the spatial values using images.

Kail teaches the use of satellites containing high resolution cameras and infrared sensors (8-16). Kail does not teach the use of the cameras for tracking.

Cai teaches the use of cameras in order to find objects in an image and track the objects (Abstract, Section 2.1-2.2 and 3). Cai specifically teaches the obtaining of the location of the object (Section 2.1.3 First Paragraph).

It would have been obvious to one of ordinary skill in the art to combine the use of cameras to track objects as taught by Cai with the system of Kennedy because it is well known in the art that satellites may contain infrared sensors and cameras as taught by Kail.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy, Fischbach, Kail and Cai as applied to claim 12 above, and further in view of US Patent 6,816,186 to Luke et al.

[claim 13]

Cai further teaches the use of 3D points to conduct spatial-temporal matching of an image point (Section 3.1.2). This provides the ability to track the subject of interest across the views of multiple pre-calibrated fixed cameras (Section 3). Cai does not specifically teach the use of converting each spatial value to a spatial value with in a universal coordinate system.

Luke teaches the use of converting the spatial values into universal coordinates system in order to determine the location of the object in relation to a monitored area. This removes the false-alarms that might be generated by 2D systems (Col 5 Lines 8-65, Fig. 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the tracking method of Kennedy, Kail and Cai with the 3D coordinate method of Luke in order to determine the location of the object in relation to a monitored area.

#### ***Allowable Subject Matter***

Claim 33 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 571-272-7338. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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